

Refer to:
OSB2000-0275

January 2, 2001

Mr. Barron Bail
District Manager
BLM - Prineville District
P.O. Box 550
3050 NE 3rd Street
Prineville, Oregon 97754

Re: Formal Section 7 Consultation and Essential Fish Habitat Consultation on the Effects of Livestock Grazing Allotments Administered by the Bureau of Land Management in the Lower Deschutes River Subbasin, Oregon for 2000 and 2001

Dear Mr. Bail:

Enclosed is a biological opinion prepared by the National Marine Fisheries Service (NMFS) pursuant to Section 7 of the Endangered Species Act (ESA) on the effects of livestock grazing allotments administered by the Bureau of Land Management in the Lower Deschutes River subbasin, Oregon. The NMFS concludes in this biological opinion (Opinion) that the proposed action is not likely to jeopardize the subject species or adversely modify critical habitat. As required by Section 7 of the ESA, NMFS included reasonable and prudent measures with non-discretionary terms and conditions that NMFS believes are reasonable and appropriate to minimize the impact of incidental take associated with this action.

This Opinion also serves as consultation on Essential Fish Habitat pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation Management Act and implementing regulations at 50 CFR Part 600.

Please direct any questions regarding this consultation to Ron Lindland of my staff in the Oregon State Branch Office at (503) 231-2315.

Sincerely,

Donna Darm
Acting Regional Administrator

cc: Jeff Dillon, Fish and Wildlife Service
Steve Pribyl, Oregon Department of Fish and Wildlife

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Endangered Species Act - Section 7 Consultation
&
Magnuson - Stevens Act
Essential Fish Habitat Consultation

BIOLOGICAL OPINION

Bureau of Land Management Grazing Activities Affecting
Middle Columbia River Steelhead
2000 and 2001

Lower Deschutes River Basin

Agency: Bureau of Land Management, Prineville District, Deschutes Resource Area

Consultation

Conducted By: National Marine Fisheries Service
Northwest Region

Date Issued: January 2, 2001

Refer to: OSB2000-0275

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1. BACKGROUND

On September 29, 2000, the National Marine Fisheries Service (NMFS) received a September 27, 2000, letter from the Bureau of Land Management (BLM), Prineville District, Deschutes Resource Area (DRA) requesting formal consultation regarding the potential effects of their proposed livestock grazing activities for calendar year 2001 on Middle Columbia River (MCR) steelhead Evolutionarily Significant Unit (ESU). The accompanying Biological Assessment (BA) described ongoing and proposed livestock grazing actions for calendar years 2000 and 2001 and the environmental baseline, and addressed the effects of those ongoing and proposed livestock grazing actions on MCR steelhead in the Lower Deschutes River basin within the BLM's Deschutes Resource Area.

NMFS listed the MCR steelhead (*Onchorynchus mykiss*) as threatened under the Endangered Species Act (ESA) on March 25, 1999 (64 FR 14517). The NMFS designated critical habitat for MCR steelhead on February 16, 2000 (65 FR 7764) and protective regulations were issued under section 4(d) of the ESA on July 10, 2000 (65 FR 42423). All streams and their adjacent riparian areas downstream from longstanding, naturally impassable barriers (i.e. natural waterfalls in existence for at least several hundred years) that are below Pelton Dam on the Deschutes River are designated as critical habitat for MCR steelhead.

The objective of this biological opinion (Opinion) is to determine whether the subject livestock grazing actions for calendar years 2000 and 2001 are likely to jeopardize the continued existence of MCR steelhead or result in the destruction or adverse modification of designated critical habitat for MCR steelhead.

2. PROPOSED ACTIONS

The BA submitted to NMFS describes livestock grazing activities on 26 grazing allotments on BLM lands in the Lower Deschutes River basin. The BLM determined in the BA that activities on all 26 of those range allotments are "may affect, likely to adversely affect" (LAA) actions regarding MCR steelhead. Those LAA actions, which are summarized in Table 1 and individually described below, are the subject of this Opinion.

Livestock grazing in riparian areas on Prineville BLM (Deschutes Resource Area) allotments is currently authorized to occur for some time interval between November 1 and May 1 with most grazing taking place from February to mid-April. Dates of actual livestock turnout and length of grazing season vary between pastures and allotments based on environmental conditions, plant phenology, and limited BLM control in minority ownership situations. According to the BA, monitoring frequencies are generally once every five years for riparian transects and nested frequency studies, once every ten years for general photopoints, and either every year or every other year for utilization of key species determinations. The monitoring activities described below for each individual allotment are in addition to the monitoring required by "2000 Grazing Implementation Monitoring Module" for selected allotments. Even though most allotments located on Deschutes River tributary streams are considered to be "scattered tracts" because of the lack of BLM access across private lands, monitoring does occur on these allotments as described below. According to an October 24, 2000, e-mail from Jim Eisner, BLM Deschutes

Resource Area, Fishery Biologist, actual use data is available on some allotments, but because many of the BLM parcels are small and surrounded by private lands, these data are of very limited use in indicating what is happening with respect to actual numbers of cattle using a given parcel of BLM rangeland.

Table 1. BLM-administered livestock grazing allotments in the lower Deschutes River (downstream from Pelton Dam) are addressed in this Opinion. Approximate location by River Mile, acres (BLM and private), amount of use authorized, and streams providing Middle Columbia River steelhead spawning and rearing habitat.

| Allotment (Allotment Number) and Names of Pastures Where MCR Steelhead Habitat May Be Affected* | Approximate River Mile of Entry to Deschutes River | Acres BLM/Private | Authorized Number of Animal Unit Months (AUMs) | Associated Streams and Rivers (Miles of potential MCR steelhead spawning/rearing habitat on BLM) |
|--|---|--------------------------|---|--|
| Kortge (7545)** Unnamed | 12 (westside) | 438/ 2,529 | 54 | Fall Canyon Creek (0.0) (intermittent on BLM; some potential for downstream effects) |
| Pat Sharp (7569)** Unnamed | 23 (eastside) | 480/ 1,520 | 42 | Macks Canyon (0.0) (intermittent on BLM land; some potential for downstream effects) |
| Bird (7501)** Macks Canyon Sixteen Canyon | 23 (eastside) | 4,737/ 2,770 | 265 | Deschutes River (4.0, fenced to exclude cattle) Macks Canyon (1.6) Sixteen Canyon (Both intermittent on BLM land) |
| Ferry Canyon (7547)** River Riparian | 25 (westside) | 4,782/ 1,660 | 226 | Deschutes River (3.5) Ferry Canyon (1.5) |
| Reckman, J.P. (7564)** Cedar Island Sinamox Jones | 30 (eastside) | 3,194/7,835 | 198 | Deschutes River Deschutes River (12.5 miles total for both pastures; riparian pasture fences) Jones Creek (0.25) |
| Oak Canyon (7562)** Oak Canyon | 35 (westside) | 4,068/ 4,802 | 324 | Deschutes River (11.0; fenced to exclude cattle) Oakbrook Creek (0.75) |
| Buck Hollow (7558)** Creek | 43 (eastside) | 1,028/ 5,140 | 131 | Buck Hollow Creek (2.2) |
| Conley (7510)** Unnamed | 43 (eastside) | 120/ 5000 | 27 | Buck Hollow Creek (0.25) |
| Ashley (7588)** Creek | 43 (eastside) | 314/ 2101 | 35 | Buck Hollow Creek (1.0) |
| Holmes (7539)** Creek | 43 (eastside) | 314/ 2101 | 80 | Buck Hollow Creek (0.25) |
| Webb, W.L. (7579) River | 43 (eastside) | 2,978/ 4,467 | 242 | Deschutes River (7.0) Buck Hollow Creek (0.75) |
| Connolly (7511) Boxcar, Oak Springs, | 48 (eastside) | 2,494/ 30,225 | 373 | Deschutes River (3.5; riparian |

| | | | | |
|---|-------------------------|-----------------|------------------------|--|
| Handicap, Sherars | | | | pasture fences) |
| Woodside, H. (7584) Unnamed | 50 (westside) | 105/ 158 | 11 | Deschutes River (1.0) |
| Lindley (7548)** Deep Creek Salt Creek | 52 (eastside) | 595/ 1,040 | 41 | Deep Creek (1.1) Salt Creek (0.0) (Intermittent on BLM) |
| Conroy, P.J. (7512)** Unnamed | 52 (eastside) | 440/ 6,400 | 45 | Deep Creek (0.7), Cottonwood Creek (0.9) |
| Duling (7520)** Creek | 55 (westside) | 197/ 1,923 | 8 | Wapinitia Creek (0.3) |
| Morelli (7553)** Wapinitia | 55 (westside) | 647/ 725 | 12 | Deschutes River (0.8; fenced to exclude cattle), Wapinitia Creek (0.2) |
| Criterion (7583) Two Springs Windy Flat | 60 (eastside) | 12,000/None | Not Yet Established | Deschutes River (6.5 total for two pastures; fenced to exclude cattle except for three watergaps) |
| Forman, C. (7526)** Unnamed | 87 (eastside) | 400/ 2,640 | 38 | Trout Creek (0.5) |
| Nartz (7546)** Unnamed | 87 (eastside) | 80/ 200 | 12 | Trout Creek (0.4) |
| Priday, J. (7560)** Unnamed | 87 (eastside) | 1,280/ 4,380 | 100 | Trout Creek (1.0) |
| Tenmile Creek (7591)** Creek | 87 (eastside) | 242/ 3,886 | 34 | Tenmile (2.4) and Trout Creeks (0.1) |
| Delude (7518) Trout Creek, North, Mecca | 85 and 93 (eastside) | 1,210/ 940 | 76 | Deschutes River (4.0 total for three pastures; 50% fenced to exclude cattle) |
| Trout Creek (7587)** Austin | 87 (eastside) | 160/ 1,200 | 8 | Trout Creek (0.1; fenced to exclude cattle) |
| Ward Creek (7525)** Unnamed | 87 (eastside) | 160/ 160 | 8 | Ward Creek (0.25) |
| Frog Springs (7551) West, East | 90 (eastside) | 883/ 1,202 | 127 | Deschutes River (3.5) |

* Grazing in riparian pastures is authorized to occur at some time between November 1 and May 1 on the BLM-administered grazing allotments. Harassment of spawning adult MCR steelhead and trampling of MCR steelhead redds in streams where spawning habitat is available in which are accessible to livestock on these allotments may occur any time between March 15 and July 15 in the mainstem Deschutes River and westside tributaries and from late January to late May in eastside tributaries.

** This is a group 4 allotment defined in Appendix E of the “2000 Grazing Implementation Module” as “small, isolated pasture/use areas that may affect aquatic resources addressed by PACFISH/INFISH but cannot be managed effectively due to lack of access by BLM.

2.1 Allotment Descriptions

2.1.1 Kortge Allotment

The Kortge Allotment (7545) contains 438 acres of BLM land and 2,529 acres of private land. The BLM portion of this allotment contains no perennial stream and 1.2 miles of intermittent stream (Fall Canyon). Fall Canyon enters the Deschutes River from the west near River Mile (RM) 12. Fall Canyon provides spawning habitat for MCR steelhead during high water years. Range improvements on this allotment include a developed spring and a short length of fence along the northern boundary of BLM land across Fall Canyon. There is currently no operator on this allotment; however, unauthorized use (trespass) is a problem. Grazing on BLM land in this allotment is authorized for a total of 54 Animal Unit Months¹ (AUMs). According to the definition provided in Appendix E of the “2000 Grazing Implementation Monitoring Module,” BLM lands on this allotment are considered as Group 4² scattered tracts. According to the BA, monitoring on this allotment consists of: 1) A photopoint established in 1985 and repeated in 1990; 2) a nested frequency study area; and, 3) utilization of key forage species study conducted every year.

2.1.2 Pat Sharp Allotment

The Pat Sharp Allotment (7569) contains 480 acres of BLM land and 1,520 acres of private land. The BLM portion of this allotment contains a total of 0.1 mile of perennial stream (Trout Creek) and 0.15 mile of intermittent stream. Trout Creek provides spawning and rearing habitat for MCR steelhead. There are no range improvements on BLM land in this allotment. Grazing on BLM land in this allotment is authorized for a total of 42 AUMs. According to the definition provided in Appendix E of the “2000 Grazing Implementation Monitoring Module,” BLM lands on this allotment are considered as Group 4 scattered tracts. Monitoring on this allotment consists of a single photopoint.

2.1.3 Bird Allotment

The Bird Allotment (7501) contains 4,737 acres of BLM land and 2,770 acres of private land. The BLM portion of this allotment borders east side of the mainstem Deschutes River for 4.0 miles and also contains a total of 5.7 miles of three intermittent drainages (Allison, Macks, and Sixteen Canyons). This reach of the Deschutes River serves mainly as a migration corridor for MCR steelhead, since it is downstream from White River, which enters the Deschutes near RM 47 (95% of the steelhead spawning in the mainstem Deschutes River occurs upstream from White River). MCR steelhead are known to spawn in Macks Canyon during high water years. Macks Canyon enters the Deschutes River near RM 23. The Deschutes River in this allotment has been excluded from grazing by a fence constructed in cooperation with Oregon Department of Fish and Wildlife (ODFW), since the 1980s. The mouth of Macks Canyon has been fenced to exclude livestock since 1993, and the watergap on Sixteen Canyon has been closed since 1995. Springs in the North and Sixteen Canyon pastures have been developed as off-channel watering sites for livestock. Areas impacted by past season-long use and by a 1994 fire were reseeded

¹ A standardized measurement of the amount of forage necessary to sustain a cow and calf for one month.

² Small, isolated pasture/use areas that may affect aquatic resources addressed by PACFISH/INFISH but cannot be managed effectively due to lack of access by BLM.

with grasses in 1995. The area along Macks Canyon has been rested for the past six years. Riparian pastures are grazed in the spring prior to May 1.

Grazing on BLM land in this allotment is authorized for a total of 265 AUMs. According to the definition provided in Appendix E of the “2000 Grazing Implementation Monitoring Module,” BLM lands within the Macks Canyon and Sixteen Canyon pastures of this allotment are considered as Group 4 scattered tracts. According to the BA, monitoring on the Bird Allotment consists of: 1) Riparian photopoints established in 1990 at quarter-mile intervals along Macks Canyon and Sixteen Canyon; 2) photopoints established in 1991 at each of the developed spring sites; 3) utilization of key forage species conducted every other year at three sites along Macks Canyon and Sixteen Canyon; 4) continuous water temperature monitoring stations (Hobos) established in 1993 in Macks Canyon and Sixteen Canyon; 5) riparian transects established in 1994 along Macks Canyon and Sixteen Canyon; and, 6) a nested frequency³ study plot.

2.1.4 Ferry Canyon Allotment

The Ferry Canyon Allotment (7547) contains 4,782 acres of BLM land and 1,660 acres of private land. The BLM portion of this allotment borders the west side of the mainstem Deschutes River for 3.5 miles and also contains a total of 1.5 miles of intermittent stream (Ferry Canyon). Ferry Canyon enters the Deschutes River from the west near RM 24.6. This reach of the Deschutes River serves mainly as a migration corridor for MCR steelhead, since it is downstream from White River. Ferry Canyon may provide spawning habitat for MCR steelhead during high water years. Range improvements on this allotment include a fence constructed along the lower 0.5 mile of Ferry Canyon in 1993 to exclude livestock and development of three springs as off-channel water sources for livestock. Upper Ferry Canyon is inaccessible to livestock because of steep canyon walls. Grazing has not been authorized on BLM-administered lands along the Deschutes River in this allotment since 1994. Grazing on BLM land in this allotment is authorized for a total of 226 AUMs. According to the definition provided in Appendix E of the “2000 Grazing Implementation Monitoring Module,” BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA, monitoring on this allotment consists of: 1) Three photopoints; 2) two nested frequency study areas; 3) a riparian transect along Ferry Canyon; 4) utilization of key forage species study annually along Ferry Canyon; and, 5) a continuous water temperature monitoring station established in Ferry Canyon in 1994.

2.1.5 J.P. Reckman Allotment

The J.P. Reckman Allotment (7564) contains 3,194 acres of BLM land and 7,835 acres of private land. The BLM portion of this allotment borders the east side of the mainstem Deschutes River for 12.5 miles and also contains a total of 2.0 miles of intermittent streams (Jones, Gert, Rattlesnake, and Box Elder Canyons). Rattlesnake Creek enters the Deschutes River near RM 30. This reach of the Deschutes River serves mainly as a migration corridor for MCR steelhead since it is downstream from White River. Range improvements on this allotment consist of:

³ A nested frequency study is done to determine the frequency of occurrence of plant species in an area and changes in that frequency over time. A series of 3x3-foot grids is established at 200 points within an allotment and the different plant species identified in portions of those grids. These studies are usually repeated at 5-year intervals.

1) Installation of a cattle guard on the road to Beavertail Campground; 2) development of a spring in Gert Canyon; and, 3) grass seeding to help rehabilitate the area burned in a 1994 fire. Grazing on BLM land in this allotment is authorized for a total of 198 AUMs and is rotated among six pastures (two along the Deschutes River). This allotment has not been grazed in four years. According to the definition provided in Appendix E of the “2000 Grazing Implementation Monitoring Module,” BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA, monitoring on this allotment consists of: 1) Three photopoints; 2) one nested frequency study area; 3) a riparian transect along the Deschutes River; and, 4) utilization of key forage species conducted every other year at four sites.

2.1.6 Oak Canyon Allotment

The Oak Canyon Allotment (7562) contains 4,068 acres of BLM land and 4,802 acres of private land. The BLM portion of this allotment borders the west side of the mainstem Deschutes River for 11.0 miles and also contains a total of 0.75 mile of intermittent stream (Oak Canyon). Oak Canyon enters the Deschutes River from the west near RM 35. This reach of the Deschutes River serves mainly as a migration corridor for MCR steelhead since it is downstream from White River. A fence along the railroad track precludes livestock access to the Deschutes River in this allotment. Range improvements on this allotment consist of: 1) A riparian pasture created along lower Oak Canyon in 1994; and, 2) development of three springs in 1993. Use of the riparian pasture in lower Oak Canyon occurs in early spring. Grazing on BLM land in this allotment is authorized for a total of 324 AUMs. According to the definition provided in Appendix E of the “2000 Grazing Implementation Monitoring Module,” BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA, monitoring on this allotment consists of: 1) Two photopoints; 2) a riparian transect established in 1995 along Oakbrook Creek; 3) a nested frequency study established in 1987 and repeated in 1994; and, 4) utilization of key forage species data collected in seven of last nine years.

2.1.7 Buck Hollow Allotment

The Buck Hollow Allotment (7558) contains 1,028 acres of BLM land and 5,140 acres of private land. There are a total of 2.2 miles of perennial stream (Buck Hollow Creek) and 1.0 mile of intermittent streams on BLM land in this allotment. Buck Hollow Creek provides spawning and rearing habitat for MCR steelhead. Riparian areas on BLM land along Buck Hollow Creek are fenced. The riparian pasture, when grazed, is used in the spring prior to May 1. Range improvements on this allotment include some gap fencing along the south rim of the Buck Hollow Creek canyon downstream from Bauman Draw. Grazing on BLM land in this allotment is authorized for a total of 131 AUMs. According to the definition provided in Appendix E of the “2000 Grazing Implementation Monitoring Module,” BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA, monitoring on this allotment consists of: 1) A single photopoint established in 1988; and, 2) a riparian transect along Buck Hollow Creek established in 1994.

2.1.8 Conley Allotment

The Conley Allotment (7510) contains 120 acres of BLM land (consisting of three scattered 40-acre tracts) and 5,000 acres of private land. There are 0.25 mile of perennial stream (Buck Hollow Creek) and 0.25 mile of intermittent stream (Karlen Draw) on BLM land in this allotment. Both provide habitat for MCR steelhead. There are no range improvements on BLM land in this allotment. Grazing on BLM land in this allotment is authorized for a total of 27 AUMs. According to the definition provided in Appendix E of the "2000 Grazing Implementation Monitoring Module," BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA, no livestock use has been authorized on this allotment in recent years, and none appears to have occurred. Monitoring on this allotment consists of a single photopoint established in Karlen Draw in 1989.

2.1.9 Ashley Allotment

The Ashley Allotment (7588) contains 314 acres of BLM land and 2,101 acres of private land. There are a total of 1.0 mile of perennial stream (Buck Hollow Creek) and no intermittent streams on or adjacent to BLM land in this allotment. Buck Hollow Creek, which enters the Deschutes River near RM 43, provides spawning and rearing habitat for MCR steelhead. Grazing on BLM land in this allotment is authorized for a total of 35 AUMs. According to the definition provided in Appendix E of the "2000 Grazing Implementation Monitoring Module," BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA, very little actual use has occurred on the BLM lands along Buck Hollow Creek since 1994. The lessee on this allotment is participating in the Buck Hollow Watershed Enhancement Plan which is a cooperative effort involving Federal and State agencies and private landowners to improve fisheries habitat in Buck Hollow Creek. Currently, there are no range improvements on BLM lands in this allotment. According to the BA, monitoring on this allotment consists of: 1) A single photopoint established in 1989; and 2) a riparian transect along Buck Hollow Creek.

2.1.10 Holmes Allotment

The Holmes Allotment (7539) contains 314 acres of BLM land and 2,101 acres of private land. The BLM portion of this allotment contains 0.25 mile of perennial stream (Buck Hollow Creek) and 0.75 mile of intermittent stream (Bronx and Finnegan Canyons). Buck Hollow Creek provides spawning and rearing habitat for MCR steelhead. There is one developed spring on this allotment. Grazing on BLM land in this allotment is authorized for a total of 80 AUMs. According to the definition provided in Appendix E of the "2000 Grazing Implementation Monitoring Module," BLM lands on this allotment are considered as Group 4 scattered tracts. The lessee on this allotment is participating in the Buck Hollow Watershed Enhancement Plan which is a cooperative effort involving Federal and State agencies and private landowners to improve fisheries habitat in Buck Hollow Creek. According to the BA monitoring on this allotment consists of: 1) A photopoint established in 1988 and repeated in 1995; and, 2) a riparian transect on Buck Hollow Creek.

2.1.11 W.L. Webb Allotment

The W.L. Webb Allotment (7579) contains 2,978 acres of BLM land in several separate blocks ranging from 40 to 640 acres; and 4,467 acres of private land. The BLM portion of this allotment contains a total of 0.75 mile of perennial stream (Buck Hollow Creek) and 5.7 miles

of intermittent streams. Buck Hollow Creek provides spawning and rearing habitat for MCR steelhead. There are no range improvements on BLM lands in this allotment. Grazing on BLM land in this allotment is authorized for a total of 242 AUMs and occurs in the spring. According to the BA, monitoring on this allotment consists of: 1) Two photopoints established in 1987 and repeated in 1996; 2) a riparian transect established along Buck Hollow Creek in 1994 and repeated in 1996; and, 3) a riparian inventory conducted in 1980 and not repeated.

2.1.12 Connolly Allotment

The Connolly Allotment (7511) contains 2,494 acres of BLM land and 30,225 acres of private land. The BLM portion of this allotment borders the east side of the mainstem Deschutes River for 3.5 miles. Range improvements on this allotment consist of four miles of fencing installed in 1987 to create three riparian pastures on BLM land along the river downstream from Maupin, Oregon. Grazing usually occurs between January and April. This reach of the Deschutes River serves mainly as a migration corridor for MCR steelhead, since it is mostly downstream from White River. Grazing on BLM land in this allotment is authorized for a total of 373 AUMs. According to the BA, monitoring on the Connolly Allotment consists of: 1) Two photopoints established in 1985 and retaken in 1990 and 1995; 2) utilization of key forage species conducted every other year at four sites along the Deschutes River which are measured every other year; 3) a riparian transect established in 1995 along the Deschutes River; and, 6) a nested frequency study plot.

2.1.13 H. Woodside Allotment

The H. Woodside Allotment (7584) contains 105 acres of BLM land in two pastures and 158 acres of private land. The BLM portion of this allotment borders the west side of the mainstem Deschutes River for 1.0 mile. The river pasture is separated from the upland pasture by a fence along the railroad tracks. This reach of the Deschutes River serves as a migration corridor for MCR steelhead. There are no range improvements on BLM land in this allotment. Grazing on BLM land in this allotment is authorized for a total of 11 AUMs. According to the BA, monitoring on this allotment consists of one photopoint.

2.1.14 Lindley Allotment

The Lindley Allotment (7548) contains a total of 595 acres of BLM land on two separate tracts and 1,040 acres of private land. The BLM portion of this allotment contains 1.1 miles of perennial stream (Deep Creek) and 1.0 mile of intermittent stream (Salt Springs Canyon). Deep Creek provides spawning and rearing habitat for MCR steelhead. The only range improvement on this allotment is a riparian pasture fence constructed in 1995 in cooperation with ODFW. Grazing on BLM land in this allotment is authorized for a total of 41 AUMs. According to the definition provided in Appendix E of the "2000 Grazing Implementation Monitoring Module," BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA, monitoring on this allotment consists of: 1) A photopoint established in 1988 and retaken in 1994; 2) a riparian transect along Deep Creek; and, 3) a continuous water temperature monitoring station established in Deep Creek in 1994.

2.1.15 P.J. Conroy Allotment

The P.J. Conroy Allotment (7512) contains 440 acres of BLM land and 6,400 acres of private land. The BLM portion of this allotment is composed of five scattered tracts containing a total of 1.57 miles of perennial streams (Deep Creek and Cottonwood Creek) which provide spawning and rearing habitat for MCR steelhead. Cottonwood Creek is a tributary to Deep Creek which is a tributary to Bakeoven Creek. Bakeoven Creek enters the Deschutes River near RM 52. There are no range improvements on BLM land in this allotment. Grazing on BLM land in this allotment is authorized for a total of 45 AUMs. In recent years, grazing has occurred in winter and early spring. According to the definition provided in Appendix E of the "2000 Grazing Implementation Monitoring Module," BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA, monitoring on this allotment consists of: 1) Photopoints every 0.25 mile along Deep and Cottonwood Creeks established in 1988 and retaken in 1995; and, 2) a continuous water temperature monitoring station in Deep Creek downstream from the allotment.

2.1.16 Duling Allotment

The Duling Allotment (7520) contains 197 acres of BLM land and 1,923 acres of private land. The BLM portion of this allotment contains a total of 1.0 mile of perennial streams (Wapinitia Creek) which provides rearing and migratory habitat for MCR steelhead. Wapinitia Creek enters the Deschutes River from the west near RM 55. Livestock access to Wapinitia Creek is precluded by steep canyon walls. There are no range improvement on BLM lands in this allotment. Grazing on BLM land in this allotment is authorized for a total of 8 AUMs. According to the definition provided in Appendix E of the "2000 Grazing Implementation Monitoring Module," BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA, monitoring on this allotment consists of: 1) A single photopoint established in 1988 and not repeated since; 2) a riparian transect established in 1994 along Wapinitia Creek; and, 3) a continuous water temperature monitoring station established in Wapinitia Creek in 1994.

2.1.17 Morelli Allotment

The Morelli Allotment (7553) contains 647 acres of BLM land and approximately 725 acres of private land. The BLM portion of this allotment borders the west side of the mainstem Deschutes River for 0.8 mile and also contains approximately 0.2 mile of Wapinitia Creek. This reach of the Deschutes River provides some spawning and rearing habitat for MCR steelhead, since it is upstream from White River. Range improvements on this allotment include: 1) A fence which precludes livestock access to the Deschutes River; 2) one developed spring; 3) approximately 0.5 mile of fence along Wapinitia Creek; and 4) gap fences at several locations along the canyon rims of the Deschutes River and Wapinitia Creek. Wapinitia Creek provides rearing and migratory habitat. There are three pastures in this allotment, with about a month of use occurring in each pasture. Grazing on BLM land in this allotment is authorized for a total of 12 AUMs. According to the definition provided in Appendix E of the "2000 Grazing Implementation Monitoring Module," BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA monitoring on this allotment consists of: 1) A single

upland photopoint established in 1988 and not repeated since; 2) a continuous water temperature recording established in Wapiniatia Creek in 1994; and 3) upstream and downstream photopoints every 0.25 mile along Wapiniatia Creek in 1980 but not repeated since.

2.1.18 Criterion Allotment

The Criterion Allotment (7583) contains 12,000 acres of BLM land and no private land. The land was acquired by the BLM in 1996, and grazing has been greatly reduced since that time with the current system providing rest for approximately half the allotment every other year. This allotment borders the east side of the mainstem Deschutes River for 6.5 miles. Livestock access to the river has been excluded, except for three water gaps, since the 1980s. This reach of the Deschutes River provides some spawning and rearing habitat for MCR steelhead, since it is upstream from White River. River-accessible pastures are grazed every other year. Range improvements on this allotment include: 1) 4 stock ponds in the Devils Canyon Pasture; 2) 5 stock ponds and 2 developed springs in the El Toro/Pond Pasture; 3) 3 stock ponds in the Deer Pasture; and, 4) 7 stock ponds and 1 developed spring in the Two Springs Pasture. A specified number of AUMs has not yet been established for this allotment since it was just acquired by the BLM in 1996 ; however, as a general rule, about 20-25 acres are required to produce one (Jim Eisner, BLM Deschutes Resource Area Fishery Biologist, personal communication, July 28, 2000). According to the BA, monitoring on the Criterion Allotment consists of: 1) Four photopoints established in 1997; 2) utilization of key forage species conducted every year along the Deschutes River which are measured every year; 3) a riparian transect along the Deschutes River; and, 4) three nested frequency study areas.

2.1.19 Forman Allotment

The C. Forman Allotment (7526) contains 400 acres of BLM land and 2,640 acres of private land. The BLM portion of this allotment contains a total of 0.5 mile of perennial stream (Trout Creek) in two segments and no intermittent streams. Trout Creek enters the Deschutes River from the east near RM 87. Trout Creek provides spawning and rearing habitat for MCR steelhead. There are no range improvements on BLM lands in this allotment. Grazing on BLM land in this allotment is authorized for a total of 38 AUMs, and usually occurs in the fall. According to the definition provided in Appendix E of the “2000 Grazing Implementation Monitoring Module,” BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA, monitoring on this allotments consists of one photopoint established in 1988 and repeated in 1994.

2.1.20 Nartz Allotment

The Nartz Allotment (7546) contains 80 acres of BLM land and 200 acres of private land. The BLM portion of this allotment contains 0.4 mile of perennial stream (Trout Creek) and no intermittent stream. Trout Creek provides spawning and rearing habitat for MCR steelhead. There are no range improvements on BLM land in this allotment. Grazing on BLM land in this allotment is authorized for a total of 12 AUMs, and has occurred in early spring for the past seven years. According to the definition provided in Appendix E of the “2000 Grazing Implementation Monitoring Module,” BLM lands on this allotment are considered as Group 4

scattered tracts. According to the BA, monitoring on this allotment consists of: 1) A single upland photopoint established in 1988 and not repeated since; 2) a continuous water temperature recording established in Wapinitia Creek in 1994; and 3) upstream and downstream photopoints every 0.25 mile along Wapinitia Creek in 1980 but not repeated since.

2.1.21 J. Priday Allotment

The J. Priday Allotment (7560) contains 1,280 acres of BLM land and 4,380 acres of private land. The BLM portion of this allotment contains 1.2 miles of perennial stream (Trout Creek) and 1.4 miles of intermittent stream. Trout Creek provides spawning and rearing habitat for MCR steelhead. There are no range improvements on the BLM portion of this allotment. Grazing on BLM land in this allotment is authorized for a total of 100 AUMs, and usually occurs in the spring. According to the definition provided in Appendix E of the “2000 Grazing Implementation Monitoring Module,” BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA, monitoring on this allotment consists of: 1) A single upland photopoint established in 1988 and repeated in 1996; 2) a continuous water temperature recording established in Trout Creek in 1994; and 3) upstream and downstream photopoints every 0.25 mile along Trout Creek in 1980 but not repeated since.

2.1.22 Tenmile Creek Allotment

The Tenmile Creek Allotment (7591) contains 242 acres of BLM land and 3,886 acres of private land. The BLM portion of this allotment contains a total of 0.6 mile of perennial streams (Tenmile and Trout Creeks) and 2.8 miles of intermittent stream (Gate Springs). Tenmile and Trout Creeks provide spawning and rearing habitat for MCR steelhead. Tenmile Creek is a tributary to Trout Creek. Range improvement on this allotment consists of fencing constructed in cooperation with ODFW along Tenmile Creek. Grazing on BLM land in this allotment is authorized for a total of 34 AUMs. The current lessee has taken non-use for the past three years. According to the definition provided in Appendix E of the “2000 Grazing Implementation Monitoring Module,” BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA, monitoring on this allotment consists of: 1) A riparian transect established in 1994 along Tenmile Creek; 2) a photopoint established in 1988; and, 3) a continuous recording water temperature station established in Tenmile Creek in 1993.

2.1.23 Delude Allotment

The Delude Allotment (7518) contains 1,210 acres of BLM land and 940 acres of private land. The BLM portion of this allotment borders the east side of the mainstem Deschutes River for 5.0 miles. The Mecca Flat pasture is grazed from November through January and the Trout Creek pasture from March through April. This reach of the Deschutes River provides some spawning and rearing habitat for MCR steelhead, since it is upstream from White River. Range improvements on this allotment include: 1) Approximately 42 acres of the Mecca Flat area in this allotment has been excluded from grazing by a fence constructed in cooperation with ODFW and Oregon Trout, since the 1980s; 2) approximately 23 acres in the Trout Creek Campground area are excluded from grazing by a fence constructed in 1990; and, 3) one upland spring in the North Pasture was developed as a livestock watering source in 1998. Grazing on BLM land in

this allotment is authorized for a total of 76 AUMs. According to the BA, monitoring on this allotment consists of: 1) Three photopoints; 2) a nested frequency study plot; 3) utilization of key forage species conducted every other year at two locations along the Deschutes River; and, 4) riparian transects at two locations along the Deschutes River.

2.1.24 Trout Creek Allotment

The Trout Creek Allotment (7587) contains 160 acres of BLM land and 1,200 acres of private land. The BLM portion of this allotment contains a total of 0.1 mile of perennial stream (Trout Creek) and no intermittent streams. Trout Creek provides spawning and rearing habitat for MCR steelhead. There are no range improvements on BLM land in this allotment. Grazing on BLM land in this allotment is authorized for a total of 8 AUMs. There has been no authorized use of BLM lands on this allotment for the past five years; however, some trespass has occurred and is dealt with by BLM personnel when it occurs. According to the definition provided in Appendix E of the “2000 Grazing Implementation Monitoring Module,” BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA, monitoring on this allotment consists of: 1) Riparian photopoints taken along Trout Creek in 1987, 1990, and 1994; 2) a continuous recording water temperature established in Trout Creek in 1993; and, 3) a riparian transect along Trout Creek

2.1.25 Ward Creek Allotment

The Ward Creek Allotment (7525) contains 160 acres of BLM land and 160 acres of private land. The BLM portion of this allotment contains a total of 0.25 mile of perennial stream (Ward Creek) and no intermittent streams. Ward Creek is a tributary to Trout Creek. Ward Creek provides spawning and rearing habitat for MCR steelhead. Grazing has not been authorized on BLM lands in this allotment for five years; however, unauthorized livestock trailing down Ward Creek has resulted in heavy use of woody and herbaceous vegetation in the riparian area. According to the BA, the lessee intends to rest the allotment from grazing until riparian recovery can occur. There are currently no range improvements on BLM lands in this allotment; however, a fence to exclude livestock from the riparian area along Ward Creek has been approved by BLM pending completion of the environmental review process. Grazing on BLM land in this allotment is authorized for a total of 8 AUMs. According to the definition provided in Appendix E of the “2000 Grazing Implementation Monitoring Module,” BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA, monitoring on this allotment consists of: 1) A single photopoint established in 1995; 2) a riparian transect established along Ward Creek in 1994; and, 3) a continuous recording water temperature station established in Ward Creek in 1994.

2.1.26 Frog Springs Allotment

The Frog Springs Allotment (7551) contains 883 acres of BLM land and 1,202 acres of private land. The BLM portion of this allotment borders the east side of the mainstem Deschutes River for 3.5 miles. This reach of the Deschutes River provides some spawning and rearing habitat for MCR steelhead, since it is upstream from White River. Frog Springs was excluded from livestock grazing by a fence constructed in the early 1990s. Grazing on BLM land in this

allotment is authorized for a total of 127 AUMs and usually occurs in March and April. According to the BA, monitoring on this allotment consists of: 1) A sequence of riparian photopoints along the Deschutes River; 2) a riparian transect along the Deschutes River; and, 3) utilization of key species study plots.

2.2 Allotment Monitoring Summary

A March 9, 2000, USFS/BLM memorandum transmitted the “2000 Grazing Implementation Monitoring Module” to the Prineville BLM District and other BLM Districts and National Forests in Oregon. The DRA of the Prineville BLM District conducted implementation monitoring as directed in the module, in addition to that listed for each allotment above, on BLM allotments on the Deschutes River during 2000 and will do so again during 2001. Effectiveness monitoring, also a part of the grazing monitoring module, will begin in selected allotments in 2001. Implementation and effectiveness monitoring is expected to continue in accordance with the module protocol

The DRA of the Prineville BLM District is within the area covered by PACFISH⁴ (USDA and USDI 1994); therefore, all agency activities are required to be consistent with their Resource Management Plan (RMP) as modified by PACFISH. The NMFS also requires that activities will be consistent with the requirements of NMFS’ June 22, 1998, biological opinion, “Section 7 Consultation on the Effects of Continued Implementation of Land and Resource Management Plans on Endangered Species Act Listed Salmon and Steelhead in the Upper Columbia and Snake River Basins” (NMFS 1998).

3. BIOLOGICAL INFORMATION AND CRITICAL HABITAT

The listing status and biological information for MCR steelhead are described in Busby et al. (1996) and NMFS (1997). The NMFS designated critical habitat for MCR steelhead on February 16, 2000 (65 FR 7764) and applied protective regulations under section 4(d) of the ESA on July 10, 2000 (65 FR 42423). The ongoing actions discussed in this Opinion are within the area designated as critical habitat for MCR steelhead.

Spawning and rearing areas for MCR steelhead on BLM lands, documented in the BA include various locations along the mainstem Deschutes River, in several tributaries (Bakeoven, Buck Hollow, Bull Run Canyon, Cove, Cottonwood, Deep, Fall Canyon, Ferry Canyon, Jones Canyon, Macks Canyon, Nena, Oak Canyon, Sixteen Canyon, Tenmile, and Trout Creeks), and in the lower two miles of White River. MCR steelhead also incubate, feed, and migrate in these waters. MCR steelhead are suspected but not confirmed to spawn in Ward Creek. Historically, MCR steelhead are thought to have spawned in Bronx Canyon. Based on limited spawning ground counts in the mainstem Deschutes and tributaries, it is believed that mainstem spawning accounts for up to 85% and tributary spawning 15% of natural production in the Deschutes River

⁴ U.S. Department of Agriculture (USDA) and U.S. Department of Interior (USDI). Environmental Assessment for Implementation of Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH) (March, 1994).

basin (memorandum from Jim Newton, Oregon Department of Fish and Wildlife, August 11, 1999).

According to the BA, MCR steelhead spawn in the mainstem Deschutes River and west side tributaries of the Deschutes River from March through June; while spawning in the east side tributaries can occur from late-January through mid-April. ODFW (1997) citing Olsen et al. (1991) states that spawning in eastside tributaries may have evolved to an earlier time than westside tributaries or the mainstem because stream flow tends to decrease earlier in the more arid eastside streams. Fry emergence timing depends on time of spawning and water temperature during egg incubation, but usually occurs from late May through June. The ODFW guidelines for the timing of in-water work lists February 1- March 15 as the preferred in-water work period for the mainstem Deschutes River downstream from Pelton Dam, and July 1- October 31 as the preferred work period for White River and Buck Hollow, Bakeoven, and Trout Creeks (ODFW 2000). The preferred work period in the mainstem Deschutes is intended to protect fall chinook salmon and resident rainbow trout in addition to MCR steelhead.

Those MCR steelhead that spawn in the mainstem Deschutes River typically spawn near the downstream ends of islands or on the shallow water side between the island and the streambank. The mean water depth at which 28 MCR steelhead redds were located in the mainstem Deschutes River was 54.1 centimeters, mean water velocity over those redds was 71.4 centimeter/second, and mean gravel size in which the redds were constructed was 32.5 mm in diameter (Zimmerman and Reeves 1998). Determining specific locations of steelhead redds in most sections of the mainstem Deschutes River is difficult or impossible during most years, because of high flows and turbidity when steelhead are spawning (telephone conversation with Jim Eisner, BLM Fishery Biologist, June 22, 1999). BLM personnel attempted to collect information regarding MCR steelhead redd locations in the mainstem Deschutes River during the spring of 2000, and a report summarizing their findings is expected by the end of 2000.

Juvenile MCR steelhead rear throughout the mainstem Deschutes downstream from Pelton Reregulating Dam. They utilize streamside vegetation as well as stream substrate and other instream structure as cover. Sampling (electrofishing) conducted by Zimmerman and Reeves (1999) in the mainstem Deschutes River found that resident rainbow trout fry (young-of-the-year) outnumbered steelhead fry by a proportion of approximately 9.5 to 1. The proportion of Age 1+ and older juvenile resident rainbow trout to juvenile steelhead was approximately 9 to 1.

4. EVALUATING PROPOSED ACTIONS

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). NMFS must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify critical habitat. This analysis involves the: 1) Definition of the biological requirements and current status of the listed species; and 2) evaluation of the relevance of the environmental baseline to the species' current status.

Subsequently, NMFS evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NMFS must consider the estimated level of mortality attributable to: 1) Collective effects of the proposed or continuing action; 2) the environmental baseline; and 3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmonid's life stages that occur beyond the action area. If NMFS finds that the action is likely to jeopardize, NMFS must identify reasonable and prudent alternatives for the action.

Furthermore, NMFS evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' designated critical habitat. The NMFS must determine whether habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. The NMFS identifies those effects of the action that impair the function of any essential element of critical habitat. The NMFS then considers whether such impairment appreciably diminishes the habitat's value for the species' survival and recovery. If NMFS concludes that the action will destroy or adversely modify critical habitat it must identify any reasonable and prudent alternatives available.

For livestock grazing actions, NMFS' jeopardy analysis considers direct or indirect mortality of fish attributable to the actions. NMFS' critical habitat analysis considers the extent to which the proposed action impairs the function of essential biological elements necessary for juvenile and adult migration, spawning, and rearing of the MCR steelhead under the existing environmental baseline.

4.1 Biological Requirements

The first step the NMFS uses when applying the ESA section 7(a)(2) to listed steelhead is to define the species' biological requirements that are most relevant to each consultation. The NMFS also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NMFS starts with the determinations made in its decision to list MCR steelhead for ESA protection and also considers new data available that is relevant to the determination.

The relevant biological requirements are those necessary for MCR steelhead to survive and recover to naturally reproducing population levels at which protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful adult and juvenile migration, spawning and rearing. MCR steelhead survival in the wild depends upon the proper functioning of certain ecosystem processes, including habitat formation and maintenance. Restoring functional habitats depends largely on allowing natural processes to increase their ecological function, while at the same time removing adverse impacts of current practices. In conducting analyses of habitat-altering actions, NMFS usually defines the biological requirements in terms of a concept called Properly

Functioning Condition (PFC) and utilizes a “habitat approach” to its analysis (NMFS 1999). The current status of the MCR steelhead, based upon their risk of extinction, has not significantly improved since the species was listed.

4.2 Environmental Baseline

The environmental baseline is an analysis of the effects of past and present human and natural factors leading to the current status of the species or its habitat and ecosystem within the action area. The “action area” is defined as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action” (50 CFR 402.02). The “action area” for this consultation, therefore, includes the mainstem Deschutes River from Pelton Reregulating Dam downstream to its mouth and all tributaries in that reach which flow through or adjacent to BLM land. The Lower Deschutes River subbasin (downstream from Pelton Dam) covers approximately 2,700 square miles (ODFW 1997). This is equal to approximately 1,728,000 acres. BLM lands on the 26 livestock grazing allotments addressed in this Opinion total approximately 43,350 acres or 2.5 percent of the total subbasin area.

The current range-wide population status and trends for MCR steelhead are described in Busby et al. (1996) and in NMFS (1997). ODFW (1997) listed the Pelton/Round Butte hydroelectric complex, low summer flows and high water temperatures in tributary streams, and stream bank degradation as production constraints on MCR steelhead in the Lower Deschutes River. Sedimentation (resulting mainly from glacial flour from Mount Hood glaciers) in the mainstem Deschutes downstream from White River (River Mile 47) could cause spawning gravel for MCR steelhead to become less useable and could negatively impact aquatic insect production, decreasing juvenile salmonid production potential.

Implementation of standards developed as a result of decisions described in the BLM’s 1986 Two Rivers Resource Management Plan (BLM 1986) and the 1993 Lower Deschutes River Management Plan (BLM et al. 1993) regarding livestock grazing, off-road vehicle management, and management of undeveloped campsites have resulted in improvements in riparian vegetation conditions on BLM lands along the Lower Deschutes River and some of its tributaries. Implementation of the Strategy for Salmon in 1992 and PACFISH in 1994 resulted in a concerted effort to rework grazing management strategies on allotments in the DRA and institute science-based grazing systems in order to eliminate long-term habitat deterioration and promote riparian recovery.

Environmental baseline conditions within the action area were evaluated for the subject actions at the project site and watershed scales. The results of this evaluation, based on the “matrix of pathways and indicators” (MPI) described in *Making Endangered Species Act Effects Determinations for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996), follow. This method assesses the current condition of instream, riparian, and watershed factors that collectively provide properly functioning aquatic habitat essential for the survival and recovery of the species. An assessment of the essential features of MCR steelhead critical habitat is obtained by using the MPI process to evaluate whether aquatic habitat is properly functioning. For the purposes of this consultation, streams within the action area were grouped into six watersheds. These were: 1) Lower Deschutes River; 2) Macks Canyon, Jones Canyon,

Bakeoven Creek, Buck Hollow Creek, Ferry Canyon, and Oakbrook Canyon; 3) Gordon Canyon, Harris Canyon, Sixteen Canyon, Box Elder Canyon, Rattlesnake Canyon, Cove Creek, Fall Canyon, Bull Run Canyon, Dry Canyon, and Craft Canyon; 4) Wapinitia Creek, Cottonwood Creek, and Deep Creek; 5) Trout Creek and Tenmile Creek; and 6) White River. Since actual data for many of the habitat indicators in the MPI are not available for many streams, ratings are based on professional judgement of BLM fishery biologists.

In the Lower Deschutes River mainstem, 11 of the 16 habitat indicators for which data were available were rated as properly functioning, based on thresholds presented in NMFS' MPI. Water temperature, chemical contamination/nutrients, and physical barriers were rated as not properly functioning, while road density and location was rated as functioning at risk. Summer water temperatures as high as 76°F have been recorded at River Mile 1. The Lower Deschutes is on the Oregon Department of Environmental Quality (ODEQ) Clean Water Act Section 303(d) list because of low dissolved oxygen levels and pH. On the mainstem Deschutes River, the Pelton Dam at RM 100 prevents MCR steelhead from reaching historic spawning and rearing habitat upstream.

In stream groups 2-5, which are all tributaries to the Deschutes River, water temperature, large wood, pool frequency, width/depth ratio, and peak flow/base flow habitat indicators are rated as not properly functioning. Sediment/turbidity, chemical contamination/nutrients, substrate embeddedness, and pool quality indicators are rated as at risk or not properly functioning for these tributary streams.

For the White River, which enters the Deschutes River at RM 47, 9 of the 16 habitat indicators were rated as properly functioning. Water temperature and sediment/turbidity were rated as not properly functioning. Maximum water temperatures reach 75°F. Since the White River originates on the slopes of Mt. Hood, the glacial flour content is high. A series of natural waterfalls at RM 2 on White River blocks upstream migration for anadromous fish.

4.2.1 Lower Deschutes River Allotments

The Bird (4.0 miles eastside), Ferry Canyon (westside 3.5 miles), J.P. Reckman (eastside 12.5 miles), Oak Canyon (westside 11 miles), W.L. Webb (eastside 7.0 miles), Connolly (eastside 3.5 miles), H. Woodside (westside 1.0 mile), Morelli (westside 0.8 mile), Criterion (eastside 6.5 miles), Delude (eastside 4.0 miles), and Frog Springs (eastside 3.5 miles) allotments are located along the Deschutes River. The 37,098 acres of BLM-administered lands on these 11 allotments comprise approximately 2.1 percent of the total acreage in the Lower Deschutes River subbasin. The Bird, Ferry Canyon, J.P. Reckman, Oak Canyon, and W.L. Webb allotments are located downstream from White River (RM 47).

On BLM-administered land within the Bird, Oak Canyon, and Morelli allotments (a total of 15.8 miles), fences exclude livestock from the river and the riparian area along the river. On BLM-administered lands in the Criterion Allotment (7583) a fence excludes livestock access to the river except at three water gaps; on the Delude Allotment (7518) approximately half of the riparian area along the river is excluded from livestock use. On BLM-administered land on the J.P. Reckman and Connolly allotments, fences create separate riparian pastures along the river,

which are grazed during early spring. Riparian areas on BLM-administered lands on the Ferry Canyon, W.L. Webb, H. Woodside, approximately half of Delude, and Frog Springs allotments are not currently fenced. Therefore, a total of approximately 17 miles (in segments ranging from 1.0 to 7.0 miles in length) on BLM-administered lands on livestock grazing allotments are unfenced. This amounts to approximately 8.5 percent of the total of approximately 200 shoreline miles (100 River Miles x 2) along the Deschutes River downstream from Pelton Dam. MPI habitat ratings for the Deschutes River are discussed above. The following is a discussion of general riparian and streambank conditions where information is available for allotments which border the Deschutes River.

According to the BA, riparian vegetation conditions along the Deschutes River in the Bird Allotment (7501) are good. The Deschutes River in this allotment has been excluded from livestock use by a fence since the 1980s. Riparian vegetation conditions along Macks Canyon, which has been rested from grazing for the past six years, are rated fair with an improving trend. A wildfire in this area in 1994 has slowed recovery.

Riparian vegetation conditions along the Deschutes River in the Ferry Canyon Allotment (7547) are rated good and in an improving trend. The lower portion of Ferry Canyon has been excluded from livestock use by fencing and contains excellent vegetative diversity. Livestock are excluded from the upper portion of Ferry Canyon by steep canyon walls, and the riparian area along this reach is also in excellent condition.

Riparian conditions along the Deschutes River on the J.P. Reckman Allotment were heavily impacted by years of late season grazing, but are improving under current grazing management systems. Several species of perennial grasses have become established and reed canary grass has increased dramatically along this stretch of the river. The dominant tree species is white alder.

On the W.L. Webb Allotment (7579), riparian vegetation conditions along the Deschutes River are rated good and improving. Along the 0.75 mile reach of Buck Hollow Creek in this allotment, the BA notes a lack of understory vegetation, high width/depth ratio, and unstable streambanks.

Vegetative and riparian conditions along the Deschutes River in the Connolly Allotment (7511) appear to be slowly improving under the current management regime. There are scattered reaches, primarily associated with recreation sites, which lack good vegetative cover and streambank structure. Riparian vegetation includes white alder, reed canary grass, sedges, blackberry, horsetail, thistle, knapweed, cheat grass, and Kentucky bluegrass.

Riparian vegetation conditions along the Deschutes River in the H. Woodside Allotment (7584) are rated fair to good and improving. Woody vegetation consists of alder and willow, while herbaceous vegetation consists mainly of reed canary grass.

On the Morelli Allotment (7553), riparian vegetation conditions along Wapanitia Creek are in fair to excellent condition. A fence along the railroad tracks excludes livestock from the riparian area along the river.

On the Criterion Allotment (7583), since livestock are excluded by fence, the riparian areas along the Deschutes River is in good condition. There are numerous perennial springs on this allotment; most of which have been developed for livestock use.

On the Delude Allotment (7518), approximately half of the Deschutes River riparian area in the Mecca Flat pasture has been exclosed by fencing since the 1980s. Much of the riparian area in the Trout Creek pasture is inaccessible to livestock because of steep topography.

On the Frog Springs Allotment, riparian conditions along the river are rated in good condition and improving. Steep slopes result in a narrow riparian area along much of this section of river. Vegetation consists of alder, hackberry, mock orange, elderberry, and reed canary grass.

4.2.2 Buck Hollow, Macks Canyon, Ferry Canyon, Oakbrook Canyon, Jones Canyon

All or portions of the Ashley, Buck Hollow, Conley, Holmes, and W.L. Webb allotments are located along Buck Hollow Creek. According to the BA, the reaches of Buck Hollow Creek which flow through BLM-administered lands on the Ashley (1.0 mile), Buck Hollow (2.2 miles), Conley (0.25 mile), Holmes (0.25 mile), and W.L. Webb (0.75 mile) are currently in a degraded condition. This is a total of 4.45 miles on BLM-administered livestock grazing allotments along Buck Hollow Creek. There are approximately 26 miles of MCR steelhead habitat in the mainstem of Buck Hollow Creek (ODFW 1997). High summer water temperatures (up to 82 degrees), high width/depth ratios, lack of riparian vegetation, lack of instream cover, and lack of stream habitat complexity all contribute to the poor fisheries habitat conditions. On the Buck Hollow Allotment, monitoring and allotment inspections conducted over the last 10 years have noted very little vegetative recovery of the riparian zone along the creek. According to the BA, most of these problems can be attributed to past improper grazing management and past major flow events (eg. 1964, 1978, and 1996).

Portions of the Bird (1.6 miles) and Pat Sharp (0.1 mile) allotments are located along Macks Canyon. On both allotments, riparian conditions along Macks Canyon are rated as fair and improving from the effects of a 1994 wildfire. That portion of Macks Canyon on the Bird Allotment has been rested for the past six years and the mouth of Macks Canyon has been fenced to exclude livestock. Macks Canyon provides approximately 2.0 miles of MCR steelhead habitat (ODFW 1997).

A portion of the Ferry Canyon Allotment is located along Ferry Canyon. The lower portion of Ferry Canyon is exclosed from livestock use by fencing, and steep terrain in the upper portion excludes livestock. Riparian conditions are excellent in the upper portion and improving in the lower portion. Ferry Canyon provides approximately 2.5 miles of MCR steelhead habitat (ODFW 1997).

A portion of the Oak Canyon Allotment is located along Oakbrook Canyon (0.75 mile). According to the BA, Oakbrook Creek provides poor habitat for fish. Major flow events have resulted in downcutting and deposition of fine sediment. The lower portion of the creek is fenced, but unauthorized summer use still occurs. Oakbrook Creek provides approximately 3.0 miles of MCR steelhead habitat (ODFW 1997).

A portion of the J.P. Reckman Allotment is located along Jones Canyon (0.25 mile). Jones Canyon flows intermittently, but could be used by MCR steelhead during high water years. Jones Canyon provides approximately 2.0 miles of MCR steelhead habitat (ODFW 1997).

4.2.3 Deep Creek and Cottonwood Creek (tributaries to Bakeoven Creek)

The P.J. Conroy and Lindley Allotments are located along these drainages. On the P.J. Conroy Allotment, the riparian area along Cottonwood Creek (0.92 mile) is rated in poor to fair condition while Deep Creek (0.65 mile) is rated in fair to good condition. On the Lindley Allotment, Deep Creek (1.1 miles) is in degraded condition, with high water temperatures, high width/depth ratio, lack of riparian vegetation, lack of instream cover, and lack of habitat complexity. Deep Creek provides approximately 8.0 miles of MCR steelhead habitat (ODFW 1997). Cottonwood Creek is not listed as providing MCR steelhead habitat by ODFW.

4.2.4 Trout Creek and Tenmile Creek

The C. Forman, Nartz, J. Priday, Trout Creek, Tenmile Creek and Ward Creek Allotments are located in the Trout Creek watershed. Tenmile and Ward Creeks are tributaries to Trout Creek. A fence excludes Trout Creek from livestock use on the Trout Creek Allotment and fencing creates a riparian pasture along Trout Creek on the Tenmile Allotment. On the C. Forman Allotment, Trout Creek (0.5 mile total in two separate segments) is rated in good condition with moderate width/depth ratio, diverse riparian vegetation, some instream cover, and moderate habitat complexity. However, high water temperatures and sediment from upstream sources limit spawning and rearing potential for MCR steelhead. On the Nartz Allotment, riparian conditions along Trout Creek (0.4 mile) are rated fair to good and improving. On the J. Priday Allotment, the condition of Trout Creek (0.25 mile) is similar to that on the C. Forman Allotment described above. On the Trout Creek Allotment, riparian conditions along Trout Creek (0.1 mile) are in an upward trend; however, summer water temperatures as high as 82 degrees have been measured in this stream reach. On the Tenmile Creek Allotment, photopoint data collected since 1989 indicate a dramatic improvement in riparian vegetative condition. On the Ward Creek Allotment, Ward Creek riparian condition is rated fair. According to ODFW (1997), Trout Creek provides approximately 48 miles, Tenmile Creek 6 miles, and Ward Creek 10.5 miles of MCR steelhead habitat. BLM-administered livestock grazing allotments border these three streams for a total of 2.85 miles in segments ranging from 0.1 to 1.0 mile.

4.2.5 Wapinitia Creek

The Duling (0.3 mile) and Morelli (0.2 mile) allotments are located along Wapinitia Creek. Wapinitia Creek serves mainly as rearing and migratory habitat for MCR steelhead with very limited spawning area. Riparian conditions vary from fair to excellent. Approximately 50% of the riparian area along Wapinitia Creek is composed of rock. Wapinitia Creek provides approximately 8.0 miles of anadromous fish habitat.

5. ANALYSIS OF EFFECTS

5.1 Effects of Proposed Actions

The effects determination on habitat parameters in the BA was made using a method for evaluating current aquatic conditions (the environmental baseline) and predicting effects of the actions on them. The process described in NMFS (1996) was used to provide adequate information in a tabular form in the BA for NMFS to determine the effects of actions subject to consultation. The expected effects of the actions are expressed in terms of how they restore, maintain, or degrade each of 16 aquatic habitat factors in the action area, as described in the “checklist for documenting environmental baseline and effects of the action” (checklist) completed for each action and watershed. The results of the completed checklist for the action provide a starting point for determining the overall effect of the action on the environmental baseline in the action area and for assessing effects on essential elements of MCR steelhead critical habitat.

Impacts of livestock grazing to stream habitat and fish populations can be separated into direct and indirect effects. Direct effects are those which contribute to the immediate loss or harm to individual fish or embryos (e.g., directly stepping on a fish, trampling a redd that results in the actual destruction of embryos, or dislodging the embryos from the protective nest and ultimately destroying eggs). Indirect effects are those impacts which occur at a later time, causing loss of specific habitat features (e.g., undercut banks, spawning beds), localized reductions in habitat quality (e.g., sedimentation, loss of riparian vegetation, changes in channel stability and structure), and, ultimately, cause loss or reductions of entire populations of fish, or widespread reductions in habitat quantity and/or quality.

5.1.1 Direct Effects

Direct effects of livestock grazing may occur when livestock enter the streams occupied by MCR steelhead to loaf, drink, or cross the stream. During the early phases of their life cycle, MCR steelhead have little or no capacity for mobility, and large numbers of embryos or young are concentrated in small areas. Livestock entering fish spawning areas can trample redds, and destroy or dislodge embryos and alevins. Belsky et al. (1997) provides a review of these direct influences on stream and riparian areas. Wading in streams by livestock can be assumed to induce mortality on eggs and pre-emergent fry at least equal to that demonstrated for human wading (Roberts and White 1992). In this investigation, a single wading incident upon a simulated spawning bed induced 43 percent mortality of pre-hatching embryos. In a recent (July 12, 2000) occurrence of unauthorized livestock grazing in the Sullens Allotment on the Malheur National Forest in Eastern Oregon, five of five documented MCR steelhead redds in a meadow area of a Rosgens C-type stream channel in Squaw Creek (Middle Fork John Day River subbasin) were trampled by cattle (U.S. Forest Service memorandum, August 17, 2000).

Avoidance of direct impacts to MCR steelhead spawning areas can be achieved by scheduling grazing in pastures after July 15 or by excluding known spawning areas from livestock access where spawning habitat is present. As mentioned above, the ODFW guidelines for the timing of in-water work list February 1- March 15 as the preferred in-water work period for the mainstem Deschutes River downstream from Pelton Dam and July 1- October 31 as the preferred work period for White River and Buck Hollow, Bakeoven, and Trout Creeks. In some allotments or

pastures, there are pre-existing natural topographic, geologic, and vegetative features or high spring water flows that naturally exclude or minimize livestock use from spawning areas. Other forms of direct take (e.g., harassment of MCR steelhead by livestock when livestock enter or are adjacent to occupied habitat, resulting in MCR steelhead behavioral modifications) are more difficult to address in the context of an economically-viable grazing program. Direct take in the form of harassment is reduced, in the long term, by rangeland management that results in better riparian and in-channel habitat conditions, such as those parameters found in the MPI, that creates more cover and other important habitat features conducive to MCR steelhead survival and recovery.

Cattle wading into a stream to loaf, drink or cross the stream have the potential to frighten juvenile MCR steelhead from streamside cover. Once these juveniles are frightened from cover and swim into open water, they become more susceptible to predation from larger fish and avian predators. However, NMFS believes that the risk of mortality of juvenile salmonids due to flushing from cover by watering cattle is minimal. In addition, because of the small area of streambank actually utilized by cattle while watering in larger rivers (e.g., mainstem Deschutes) and the availability of good streamside cover in the immediate vicinity of most watering areas, mortality of juvenile MCR steelhead from this activity is expected to be minimal.

5.1.2 Indirect Effects

Numerous symposia and publications have documented the detrimental effects of livestock grazing on stream and riparian habitats (Johnson et al. 1985; Menke 1977; Meehan and Platts 1978; Cope 1979; American Fisheries Society 1980; Platts 1981; Peek and Dalke 1982; Ohmart and Anderson 1982; Kauffman and Krueger 1984; Clary and Webster 1989; Gresswell et al. 1989; Kinch 1989; Chaney et al. 1990, Belsky et al. 1997). These publications describe a series of synergistic effects that can occur when inappropriate grazing management strategies are applied (e.g. cattle over-graze riparian areas). Over time, woody and hydric herbaceous vegetation along a stream can be reduced or eliminated; trampling by livestock causes streambanks to collapse; without vegetation to slow water velocities, hold the soil, and retain moisture, floods cause more erosion of streambanks; the stream becomes wider and shallower and in some cases downcut; the water table drops; and hydric, deeply rooted herbaceous vegetation dies out and becomes replaced by upland species with shallower roots and less ability to bind the soil. The resulting instability in water volume, increased summer water temperature, loss of pools and habitat adjacent and connected to streambanks, and increased substrate fine sediment and cobble embeddedness adversely affect MCR steelhead and their habitat.

Indirect effects of livestock grazing on riparian and instream habitats include compacting stream substrates, collapse of undercut banks, destabilized streambanks, localized reduction or removal of herbaceous and woody vegetation along streambanks and within riparian areas, increased width/depth ratio, reduced pool frequency, incised channels, and lowering water tables (Platts 1991; Henjum et al. 1994). Belsky et al. (1997) provides a review of these indirect influences on stream and riparian areas. Riparian areas in poor condition are unable to buffer the effects of accelerated runoff. Accelerated runoff can cause unstable stream channels to downcut or erode laterally, accelerating erosion and sediment production (Chaney et al. 1990). Lateral erosion results in progressively wider and shallower stream channels that have warmer water

temperatures, less structure, and are less productive, thus adversely affecting fish populations. Streambank hoof shearing, hummocking, bank sloughing and inadequate carry-over vegetation reduces bank stability and silt filtration capacity (Kinch 1989).

Based on plant phenology, the only grazing strategies generally considered to have a good chance for rehabilitating degraded streams and riparian areas are light or tightly controlled uses such as winter-only grazing or riparian pastures with short, early-spring use periods, and certain strategies incorporating a full season rest (Platts 1991). Clary and Webster (1989) consolidated a number of studies to outline measures needed for maintenance and restoration of fully functioning riparian areas. They recommend resting most poor ecological condition (percent similarity of riparian vegetation to the potential natural community/composition < 25%; or stream bank/channel condition rating of "poor") riparian areas and applying "riparian grazing management practices" such as spring-only grazing and residual vegetation requirements to riparian areas in fair (percent similarity of riparian vegetation to the potential natural community/composition 26-50% or better; and stream bank/channel condition rating of at least "fair") or better ecological condition. They stress that even ecologically conservative grazing systems will not succeed without good range management such as adequate fencing, good distribution of water and salt, and adequate riding to ensure uniform cattle distribution. Cow/calf pairs have a tendency to concentrate and loaf in riparian areas during mid to late summer. Concentrated livestock use, as often occurs in uncontrolled season-long and certain rotational grazing systems, may cause unacceptable damage to woody plants and streambank morphology (Clary and Webster 1989). Spring and winter season use generally produce better livestock distribution between riparian and upland areas due to flooding of riparian areas (resulting in limited access for cattle), the presence of palatable forage on the uplands, and alternative water sources (Leonard et al. 1997, Ehrhart and Hanson 1997, and Kinch 1989). Myers (1989) concluded that good or excellent riparian conditions were maintained by grazing systems which do not allow livestock use during the hot season, and recommended grazing not be allowed during the hot summer months more than once every four years. Similarly, Clary and Webster (1989) stated grazing should be avoided during mid and late summer and recommend early grazing, followed by complete removal of livestock. Early grazing allows significant herbaceous regrowth to occur in riparian areas, reducing most grazing damage before higher flows occur the following spring or summer, and avoids impacts to woody plant species when livestock forage preference shifts occur.

In areas under historic season-long grazing, major vegetation changes can and have taken place with changes in livestock use. Routinely grazing an area for too long or too late in the growing season can cause adverse changes in the plant community. Individual plants are eliminated by re-grazing them during the growing season and not allowing adequate recovery after grazing. Regardless of seral stage, at least six inches of residual stubble or regrowth is recommended to meet the requirements of plant vigor maintenance, bank protection, and sediment entrapment (Clary and Webster 1989). More than six inches of stubble height may be required for protection of critical fisheries or easily eroded streambanks and riparian ecosystem function (Clary and Webster 1989). Over time, entire plant communities can change as a result of heavy grazing pressure. In mountain riparian systems of the Pacific Northwest, the replacement of native bunch grass with Kentucky bluegrass has occurred in many areas. Kentucky bluegrass has established itself as a dominant species in native bunch grass meadows as a result of overgrazing

and subsequent habitat deterioration. Plants in the early seral stage community do not provide as much protection for the watershed and streambanks. Many forbs and annual plants that frequently dominate early seral plant communities do not have the strong deep root systems of the later seral perennials such as bunchgrasses, sedges, rushes, shrubs, and willows. Kauffman et al. (1982) found that when grazing in moist meadows was halted, succession towards a more mesic/hydric plant community occurred.

According to the BA, with the implementation of the Two Rivers Resource Management in 1986, the Strategy for Salmon in 1992, the Lower Deschutes River Management Plan in 1993, and PACFISH in 1994, many riparian areas in the subbasin have management programs in place to protect and enhance their condition. On the Prineville BLM District, which includes the Lower Deschutes subbasin, a concerted effort was begun in the early 1990s to rework grazing management strategies and institute science-based grazing systems in order to eliminate long-term habitat deterioration and promote riparian recovery. Season of use changes and restrictions were instituted, based on scientific knowledge which deals with the phenology of key plant species in order to determine timing of grazing and lead to development of healthy riparian areas. Science-based grazing strategies to promote riparian vegetative growth have been completed for most allotments within the Lower Deschutes River subbasin. In general, this has meant a shift from summer long, hot season grazing to early spring grazing strategies. This shift in grazing strategy, given its focus on vegetative health, does not necessarily fully support aquatic species (e.g. MCR steelhead) health.

5.1.3 Allotment Specific Effects

As discussed above, MCR steelhead spawn in the Lower Deschutes River and west side tributaries of the Deschutes River from March through June; while spawning in the east side tributaries from late-January through mid-April. Fry emergence occurs from late May through June, depending on time of spawning and water temperature. Therefore, if livestock access is allowed at any time between February and early July on streams where MCR steelhead spawn, there is potential for harassment of spawning adults, trampling of redds, or harassment of rearing juveniles. As described above, if riparian grazing is allowed when and where local conditions can support it, the best time for grazing to occur (from a vegetation only standpoint) is probably during early spring green-up to allow for regrowth of vegetation prior to the end of the growing season. Studies have shown that cattle do not concentrate or spend much time in riparian areas during spring months (when compared to summer months) because water and herbaceous vegetation for grazing is readily available in upland areas away from streams during the spring period.

Studies (Leonard et al. 1997, Ehrhart and Hanson 1997, and Kinch 1989) have shown that cattle are less likely to concentrate in riparian areas during spring months because of flooding and because water and herbaceous vegetation for grazing is readily available in upland areas away from streams. By June, stream flows have receded and water and forage may be less available in upland areas. All allotments covered in this Opinion contain or are adjacent to streams where MCR steelhead are known or suspected to spawn and rear. Current BLM grazing strategies allow grazing in these allotments during the time when MCR steelhead eggs or alevins may be present in stream gravels.

Under current BLM strategies, grazing in riparian areas on Prineville BLM (Deschutes Resource Area) allotments is authorized to occur sometime between November 1 and May 1 with most use taking place from February to the middle of April. Dates of actual livestock turnout and length of grazing season vary based on environmental conditions, plant phenology, and limited BLM control and management in minority ownership situations. Cattle graze on BLM-administered allotments on the following west side tributaries to the Deschutes River which are known to contain steelhead spawning habitat: Fall Canyon (Kortge Allotment), Ferry Canyon (Ferry Canyon Allotment), and Oakbrook Creek (Oak Canyon Allotment). BLM-administered grazing allotments where cattle graze are located along the following east side tributaries to the Deschutes River which are known to contain steelhead spawning habitat: Sixteen Canyon (Bird Allotment), Macks Canyon (Bird and Pat Sharp Allotments), Jones Canyon (J.P. Reckman Allotment), Buck Hollow Creek (Buck Hollow, Conley, Ashley, Holmes, and W.L. Webb Allotments), Bakeoven Creek tributaries [Deep Creek (Lindley and P.J. Conroy Allotments) and Cottonwood Creek (P.J. Conroy Allotment)], Wapinitia Creek (Duling and Morelli Allotments), Trout Creek (C. Forman, Nartz, J. Priday, Tenmile, and Trout Creek Allotments), and Trout Creek tributaries [Tenmile Creek (Tenmile Allotment) and Ward Creek (Ward Creek Allotment)].

The Buck Hollow Creek drainage (an eastside tributary), where spawning would be expected to begin as early as January and fry emergence could occur into May, contains all or portions of five BLM-administered allotments (Buck Hollow, Conley, Ashley, Holmes, and W.L. Webb). Adult MCR steelhead have been observed in Buck Hollow Creek by ODFW as far upstream as Macken Canyon which enters Buck Hollow Creek upstream from all of these allotments. The segments of Buck Hollow Creek on BLM-administered allotments range from 0.25 mile each on the Conley and Holmes Allotments to 2.2 miles on the Buck Hollow Allotment and total 4.45 miles. As discussed above, Buck Hollow Creek in all of these allotments is in a degraded condition and far below its potential for steelhead. None of the riparian areas on BLM-administered portions of these allotments are fenced to exclude livestock or control their distribution and use by creating riparian pastures. The Two Rivers Management Plan (USDI 1986) recommended two miles of riparian fencing on the Buck Hollow Allotment and four miles of riparian fencing on the W.L. Webb Allotment, but those recommendations have never been implemented.

The Trout Creek drainage (another eastside tributary) and its tributaries (Tenmile and Ward creeks), where spawning would be expected to begin as early as January and fry emergence could occur into May, contains all or portions of six BLM-administered allotments (C. Forman, Nartz, J. Priday, Tenmile Creek, Trout Creek, and Ward Creek). The segments of Trout Creek or its tributaries on BLM-administered allotments range from 0.1 mile on the Trout Creek Allotment to 2.4 miles on the Tenmile Creek Allotment and total 4.75 miles. As discussed above, Trout Creek in all of these allotments (except Tenmile) is in a good condition. Only the 0.1 mile of Trout Creek on the Trout Creek Allotment is fenced to exclude livestock. The Two Rivers Management Plan (USDI 1986) recommended two miles of riparian fencing on the Tenmile Creek Allotment, but that recommendations have never been implemented.

Allotments addressed in this Opinion which are adjacent to the mainstem Deschutes River are Bird, Ferry Canyon, J.P. Reckman, Oak Canyon, W.L. Webb, Connolly, H. Woodside, Morelli, Criterion, Delude, and Frog Springs. Because of the depth and flow of the mainstem Deschutes River, cattle are not likely to wade into the river and are, therefore, less likely to trample MCR steelhead redds than in tributary streams. In addition, fences exclude livestock from the river on all of the Bird, Oak Canyon, and Morelli Allotments and half of the Delude Allotment. The river is excluded from livestock use on all of the Criterion Allotment, except at three watergaps. Riparian pasture fences are present along the river on the J.P. Reckman and Connolly Allotments; however, these riparian pastures are grazed during early spring under the current grazing strategy.

Fall Canyon (Kortge Allotment), Macks Canyon (Bird and Pat Sharp Allotments), Sixteen Canyon (Bird Allotment), and Jones Canyon (J.P. Reckman Allotment) contain intermittent streams on BLM-administered lands. MCR steelhead are known to spawn in the lower portions of these streams during wet years. Those portions of Wapinitia Creek on BLM-administered portions of the Duling and Morelli Allotments serve as migratory and rearing habitat for MCR steelhead.

5.2 Cumulative Effects

"Cumulative effects" are defined in 50 CFR 402.02 as those effects of "future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." The "action area" for this consultation, therefore, includes the mainstem Deschutes River from Pelton Reregulating Dam downstream to its mouth and all tributaries in that reach which flow through or adjacent to BLM land. The BLM identified no specific private or state actions that are reasonably certain to occur in the future that would affect MCR steelhead or their habitat within the action area although private grazing use is likely to continue at current levels. Of the 41,467 acres within the Lower Deschutes River National Wild and Scenic River boundary, the BLM administers 20,461 acres, the State of Oregon 4,806 acres, the Confederated Tribes of Warm Springs (CTWS) 5,699 acres, and 10,251 acres is privately owned (BLM et al. 1993). However, for the Lower Deschutes subbasin as a whole, the BLM manages approximately 171,849 acres, or 9.9 percent of the 1.73 million total acres in the subbasin.

Approximately 26 of the 29 miles of State-owned lands along the mainstem Deschutes River has been excluded from livestock grazing. Private land owners and the CTWS have excluded livestock grazing from an additional 10-12 miles of the Deschutes River. ODFW, in working with various private landowners as well as state and Federal agencies, has succeeded in having approximately 75 miles of steelhead-producing Deschutes River tributary streams excluded from livestock grazing (August 11, 1999, memorandum from Jim Newton, ODFW Fishery Biologist).

6. CONCLUSION

The NMFS has determined that, when the effects of the subject actions addressed in this Opinion are added to the environmental baseline and cumulative effects occurring in the action area, they

are not likely to jeopardize the continued existence of MCR steelhead. Additionally, the NMFS concludes that the subject actions would not cause adverse modification or destruction of designated critical habitat for MCR steelhead. These conclusions were reached primarily because: 1) All relevant aquatic habitat indicators on BLM-administered livestock grazing allotments along the mainstem Deschutes River and tributaries would be maintained or improved under current grazing regimes; 2) available BLM monitoring data indicate that implementation of a spring grazing season on most allotments has resulted in improvement in riparian vegetation and streambank conditions; 3) although available data shows that trampling of MCR steelhead redds does occur and that the percentage of redds trampled can be high in certain channel types (meadow areas, C-type stream channels), improvements in BLM-administered livestock grazing in allotments containing or adjacent to MCR steelhead spawning areas are expected to minimize the number of redds trampled by livestock; and, 4) because of improvements in riparian vegetation, stream shading, and streambank stability, aquatic habitat indicators such as water temperature, sediment, substrate embeddedness, width/depth ratio, and streambank condition are expected to be improved and restored over the long term on Deschutes River tributary streams. In reaching these conclusions, NMFS has utilized the best scientific and commercial data available as documented herein and by the BA describing the Federal actions.

7. CONSERVATION RECOMMENDATIONS

Section 7 (a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species, to minimize or avoid adverse modification of critical habitat, or to develop additional information. The NMFS believes that the following conservation recommendation regarding livestock grazing should be implemented:

1. Review range improvement budget annually and prioritize areas which would benefit from development of off-channel water sources and cattle exclusion devices for riparian areas along streams containing MCR steelhead habitat.
2. Annually, pursue full funding of the livestock grazing program to fulfill aquatic and riparian conservation measures previously identified BLM management plans (Two River Plan, PACFISH, and Lower Deschutes River Management Plan).
3. Annually, review all allotments for opportunities to allow for rest or additional rest of high priority pastures. The review should result in implementing changes in grazing system, restructuring of pasture boundaries, and increasing the number of pastures within an allotment to promote conservation of and minimize future impacts to MCR steelhead and their designated critical habitat.

8. REINITIATION OF CONSULTATION

Reinitiation of consultation is required if: 1) If the action is modified in a way that causes an effect on the listed species that was not previously considered in the BA and this Opinion; 2) new information or project monitoring reveals effects of the action that may affect the listed species in a way not previously considered; or 3) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR. 402.16). The BLM, Prineville District, may also be required to reinitiate consultation if the proposed actions are not consistent with conservation measures developed through the pending consultation on land and resource management plans for Federal land management units in the Mid and Upper Columbia River Basins.

9. ESSENTIAL FISH HABITAT

Public Law 104-267, the Sustainable Fisheries Act of 1996, amended the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) to establish new requirements for “Essential Fish Habitat” (EFH) descriptions in Federal fishery management plans and to require Federal agencies to consult with NMFS on activities that may adversely affect EFH. “Essential Fish Habitat” means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity” Magnuson-Stevens Act §3. The Pacific Fisheries Management Council (PFMC) has recommended an EFH designation for the Pacific salmon fishery that would include those waters and substrate necessary to ensure the production needed to support a long-term sustainable fishery (*i.e.*, properly functioning habitat conditions necessary for the long-term survival of the species through the full range of environmental variation).

The Magnuson-Stevens Act requires consultation for all actions that may adversely affect EFH, and it does not distinguish between actions in EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities that may have an adverse effect on EFH. Therefore, EFH consultation with NMFS is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

The consultation requirements of section 305(b) of the Magnuson-Stevens Act (16 U.S.C. 1855(b)) provide that:

- Federal agencies must consult with NMFS on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;
- NMFS shall provide conservation recommendations for any Federal or State activity that may adversely affect EFH;
- Federal agencies shall within 30 days after receiving conservation recommendations from NMFS provide a detailed response in writing to NMFS regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the

case of a response that is inconsistent with the conservation recommendations of NMFS, the Federal agency shall explain its reasons for not following the recommendations.

9.1 Identification of Essential Fish Habitat

Proposed designated salmon fishery EFH includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except above the impassable barriers identified by PFMC (PFMC 1999). Chief Joseph Dam, Dworshak Dam, and the Hells Canyon Complex (Hells Canyon, Oxbow, and Brownlee Dams) are among the listed man-made barriers that represent the upstream extent of the Pacific salmon fishery EFH. Salmon EFH excludes areas upstream of longstanding naturally impassable barriers (i.e., natural waterfalls in existence for several hundred years). In the estuarine and marine areas, proposed designated salmon EFH extends from the nearshore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone (370.4 km) offshore of Washington, Oregon, and California north of Point Conception (PFMC 1999).

9.2 Proposed Action

The proposed action is detailed above in Part II. The proposed action is the implementation of the livestock grazing program on BLM-administered lands within the Deschutes Resource Area for 2001. The action area for this consultation includes the mainstem Deschutes River from Pelton Reregulating Dam downstream to its mouth and all tributaries in that reach which flow through or adjacent to BLM land. Streams within the Lower Deschutes River subbasin are part of the proposed designated EFH for chinook salmon (*Onchorhynchus tshawytscha*) (PFMC 1999). Both spring and fall chinook salmon occur in the Lower Deschutes River subbasin. A description and identification of EFH for salmon is found in Appendix A to Amendment 14 to the Pacific Coast Salmon Plan (PFMC 1999). Assessment of the impacts to chinook salmon EFH from the subject action is based on this information.

The objective of this EFH consultation is to determine whether the implementation of the livestock grazing program on the DRA is likely to adversely affect EFH for chinook salmon in the Lower Deschutes River subbasin.

9.3 Effects of the Proposed Action

Since spring chinook salmon do not spawn or rear in Deschutes River tributary streams which are within or adjacent to BLM-administered livestock grazing allotments addressed in this Opinion and since fall chinook salmon spawn only in the mainstem Deschutes River and do not rear in the system, implementation of the livestock grazing program on the DRA is not likely to adversely affect chinook salmon EFH.

9.4 Conclusion

The NMFS believes that implementation of the livestock grazing program on BLM-administered lands in the DRA is not likely to adversely affect proposed designated EFH for chinook salmon in the Lower Deschutes River subbasin.

9.5 Conservation Recommendations

Because the implementation of the livestock grazing program on BLM-administered lands in the DRA is not likely to adversely affect proposed EFH for spring or fall chinook salmon, the NMFS has no conservation recommendations at this time.

9.6 Consultation Renewal

The BLM must reinitiate EFH consultation with NMFS if the action is substantially revised in a manner that may adversely affect EFH or if new information becomes available that affects the basis for NMFS' EFH conservation recommendations (50 CFR Section 600.920 [k]).

10. LITERATURE CITED

Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the data used in developing this Opinion in addition to the BA and additional information requested by NMFS and provided by the Prineville BLM District.

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11. INCIDENTAL TAKE STATEMENT

Section 4 (d) and Section 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering (64 FR 60727; November 8, 1999). Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement. An incidental take statement specifies the impact of any incidental taking of threatened species. If necessary, it also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

11.1 Amount or Extent of Take

The NMFS anticipates that the subject grazing actions covered by this Opinion have more than a negligible likelihood of resulting in incidental take of MCR steelhead. Some level of incidental take is expected to result from livestock grazing due to the potential for cattle to actually trample MCR steelhead redds, disturbance of spawning adult steelhead, or frightening of juvenile MCR steelhead from cover by livestock wading in streams. Because of the inherent biological characteristics of aquatic species such as MCR steelhead, however, the likelihood of discovering

take attributable to these actions is very small. Effects of actions such as those addressed in this Opinion are largely unquantifiable in the short term, and may not be measurable as long-term effects on the species' habitat or population levels. Therefore, even though NMFS expects some incidental take to occur due to the actions covered by this Opinion, the best scientific and commercial data available are not sufficient to enable NMFS to estimate a specific amount of incidental take of listed fish at any life stage.

11.2 Effect of the Take

In this Opinion, NMFS has determined that the level of anticipated take is not likely to result in jeopardy to MCR steelhead or to destroy or adversely modify designated critical habitat for MCR steelhead when the reasonable and prudent measures are implemented.

11.3 Reasonable and Prudent Measures

The NMFS believes the following reasonable and prudent measures are necessary and appropriate to minimize the likelihood of take of MCR steelhead resulting from the actions covered in this Opinion. The BLM shall:

4. Minimize the likelihood of incidental take resulting from livestock grazing and associated activities by managing livestock grazing allotments such that direct effects of livestock on spawning adult MCR steelhead, steelhead eggs, and pre-emergent fry in streams on or adjacent to those allotments are avoided or minimized.
5. Minimize the likelihood of incidental take resulting from livestock grazing and associated activities by managing livestock grazing allotments such that direct and indirect effects of livestock on key components of MCR steelhead designated critical habitat are avoided or minimized.

11.4. Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the BLM must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

6. To implement reasonable and prudent measure #1, above, the BLM shall:
 - a. Identify which specific stream reaches within or adjacent to the BLM portions of range allotments covered by this Opinion currently provide suitable spawning habitat for MCR steelhead;
 - b. Determine timeframes (from BLM data files, ODFW, or other sources) during which MCR steelhead could be expected to utilize those stream reaches for spawning and during which eggs and pre-emergent fry would be expected to be present in the stream gravels;

- c. Prioritize the sensitivity of those stream reaches to grazing impacts based on Rosgen's stream channel types quantity, quality, and concentration of MCR steelhead spawning habitat within each stream reach;
 - d. Provide this prioritized list of stream reaches covering at least 60% of the affected streams to the Level I Interagency Streamlining Consultation Team at least 90 days prior to the 2002 turnout date for allotments covered by this Opinion with the remainder being provided 90 days prior to 2003 turnout;
 - e. Based on this prioritized list, the Level 1 Team for the Prineville BLM Deschutes Resource Area shall determine on which of those stream reaches it is necessary to eliminate access by livestock, during those times when eggs or pre-emergent fry would be expected to be present in the gravel to avoid take of spawning adult MCR steelhead, their eggs, or pre-emergent fry. Access would be eliminated by installing and maintaining temporary electric fencing during the grazing season, permanent fencing, redesigning pasture layout, or changing grazing rotations along those key stream reaches which currently provide the important MCR steelhead spawning habitat; and,
 - f. When unauthorized⁵ or excess⁶ use by livestock occurs within stream reaches identified as MCR steelhead spawning habitat prior to July 15, the permittee will be notified to remove the livestock immediately. BLM shall also notify NMFS Habitat Division within 24 hours. Livestock shall be removed within two days of notification to the permittee. If take has occurred, NMFS Law Enforcement shall also be notified by BLM within 24 hours of discovery by telephone at 360.418.4246.
7. To implement reasonable and prudent measure #2, above, the BLM shall:
- a. Comply with all reasonable and prudent measures, terms and conditions, provided with NMFS' June 22, 1998 biological opinion, "Section 7 consultation on the Effects of Continued Implementation of Land and Resource Management Plans on Endangered Species Act Listed Salmon and Steelhead in the Upper Columbia and Snake River Basins" (NMFS 1998).
 - b. Consistently and fully implement grazing-related standards and guidelines listed in PACFISH to achieve Riparian Management Objectives regarding bank stability, water temperature, large woody material, lower bank angle, and width/depth ratio; as well as other aquatic habitat parameters which may be effected by livestock grazing;

⁵ Unauthorized use is any incident whereby livestock owned by a non-permittee enter onto the Federal lands.

⁶ Excess use is any incident whereby livestock owned by a permittee holding a grazing permit are found in areas or at times other than shown on the grazing permit or otherwise authorized under a bill for collection.

- c. Meet all requirements of and fully implement the 2000 Grazing Implementation Monitoring Module and the 2001 Grazing Effectiveness Monitoring Module (copies of end of season reports shall be provided to Level 1 Team members).
- d. Meet implementation and effectiveness monitoring requirements developed by the Interagency Implementation Team and any additional requirements developed by the Level I Team for specific pasture units;
- e. Develop and fully implement within three years a plan to provide complete rest from grazing for the BLM-administered pastures along Buck Hollow Creek within the Buck Hollow (7558), Ashley (7588), and W.L. Webb (7579) allotments. In total, these pastures border approximately 3.95 miles of Buck Hollow Creek. Information provided in the BA indicates that the riparian area and instream habitat of Buck Hollow Creek is currently in a degraded condition within these allotments.
- f. Implement during FY 2001 riparian fencing as recommended in the Two Rivers Management Plan (USDI 1986) on the Buck Hollow (2 miles of fence), Tenmile Creek (2 miles of fence), and W.L. Webb (4 miles of fence) allotments;
- g. Provide an end-of-year report on grazing in allotments which contain MCR steelhead designated critical habitat or which may affect designated critical habitat downstream to NMFS by December 31 of each year. The report shall include the following: 1) Overview of the proposed action and actual management strategy implemented (livestock numbers, on-off dates for each pasture, grazing strategy, etc.); 2) specific BLM implementation and effectiveness monitoring data, date, and location collected (stubble height, use of woody vegetation, bank damage, unauthorized grazing, fence maintenance); 3) specific permittee monitoring data reported to BLM; 4) review of management and compliance successes and failures; 5) new habitat trend of steelhead population data; 6) compliance with each pertinent Term and Condition listed above; and 7) management changes made for current year and recommendations for future years.

Send the completed report to:

National Marine Fisheries Service
Oregon State Branch Office, Habitat Division
Attn: Ron Lindland
525 NE Oregon Street, Suite 500

Portland, Oregon 97232-2778